IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	:	
Robert L. de Jong et al.	:	Examiner: M. S. Alvo
U.S. Serial No. 10/099,610	:	Group Art Unit: 1731
Filed March 15, 2002	:	
Docket No. 2212-1 (FJ-00-1-1)	:	
For: METHOD OF REMOVING HIGH DENSITY STICKIES FROM SECONDARY PAPERMAKING FIBERS	:	

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

BRIEF ON APPEAL UNDER 37 CFR §41.37(c)

Sir:

Applicant hereby submits its *Brief on Appeal* in the above-noted United States Patent Application. A *Notice of Appeal* was submitted on February 9, 2005 appealing the rejection of Claims 20-29 and 38-41. Please charge the fee for the *Brief* to our Deposit Account No. 50-0935. A *Petition* and fee for a one-month *Extension of Time* is being filed herewith. If any additional extensions are necessary, please consider this paper a *Petition* therefor and charge our Deposit Account for any fees due in connection with this *Appeal*.

I. REAL PARTY IN INTEREST

The real party in interest in this case is Georgia-Pacific Corporation, Assignee of Record; recorded at Reel 012715, Frame 0350.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals, interferences or judicial proceedings related to, or which will affect, or which will be affected by, or which will have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 20-29 and 38-41 stand rejected in this application and are currently on appeal. Claims 1-19 and 30-37 have been canceled. A complete listing of claims on appeal is provided in Appendix A.

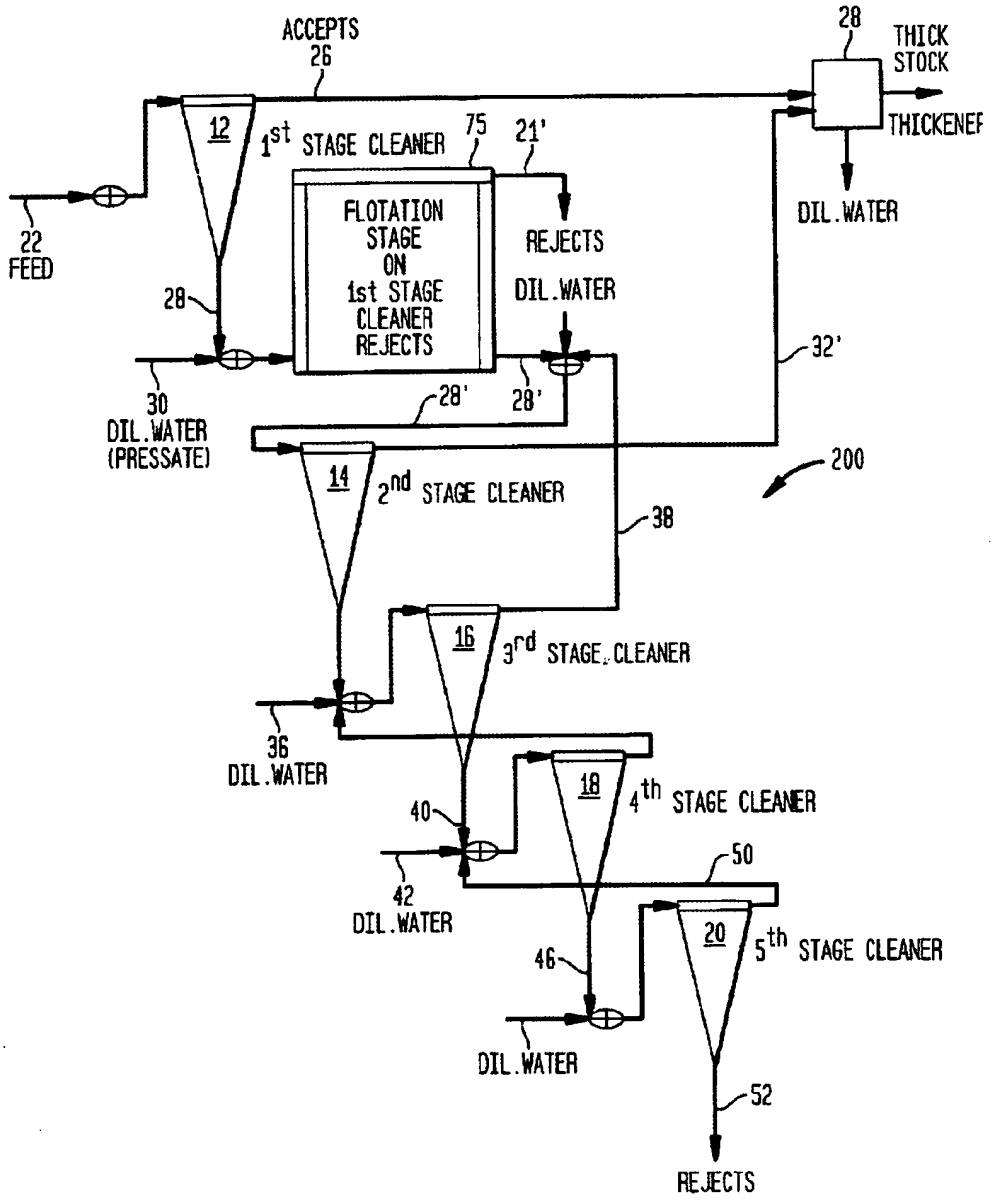
IV. STATUS OF AMENDMENTS

No amendments have been filed subsequent to the *Final Rejection* of 12/28/2004.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to a method for processing papermaking fibers with a hybrid centrifugal/flotation multistage system to selectively remove hydrophobic contaminants. The inventive method can be described in reference to **Figure 3** of the application as filed, which is reproduced below, along with the text beginning on page 14 of the application as filed.

FIG. 3



There is provided a first bank of centrifugal cleaners **12**, from which a first aqueous accepts stream **26** is generated and a first rejects stream **28**. The first rejects stream is fed into a flotation stage **75**, where the stream is treated to selectively remove hydrophobic waste, thereby producing a purified intermediate stream **28'** and rejects **21'**. The rejects **21'** from the flotation stage are removed from the system. The intermediate stream is then fed forward to a second stage of centrifugal cleaners **14**, which generates a second accepts stream **32'** and a second rejects stream (not numbered). The second

accepts stream **32'** is then fed to a thickener **28** along with the first accepts stream **26**.

For purposes of this Appeal, the claims are divided into three groups. Group I includes Claims 20, 21, 25, 38 and 41. Claims 22, 23, and 24 are Group II claims, while Claims of Group III include Claims 26, 27, 28, 39 and 40. Claim 20, representative of Claim Group I, is reproduced below.

> 20. A method of processing papermaking fibers with a multistage array of forward cleaners including a plurality of centrifugal cleaners configured to generate accepts streams and rejects streams which concentrate hydrophobic contaminants, said method comprising:
>
> (a) feeding a first aqueous feed stream including papermaking fibers to a first stage bank of centrifugal cleaners of said multistage array;
>
> (b) generating a first accepts aqueous stream and a first rejects aqueous stream in said first stage bank of centrifugal cleaners, said first aqueous rejects stream being enriched in heavy hydrophobic contaminants with respect to said first aqueous feed stream;
>
> (c) supplying said first rejects aqueous stream to a flotation stage;
>
> (d) treating said first rejects aqueous stream in said flotation stage to selectively remove hydrophobic waste from said first aqueous rejects stream and produce an intermediate aqueous purified feed stream;
>
> (e) feeding said aqueous purified intermediate feed stream forward to a second stage bank of centrifugal cleaners of said multistage array, said second centrifugal cleaner being configured to generate a second accepts aqueous stream; and
>
> (f) combining said first accepts aqueous stream with said second accepts aqueous stream to form a combined accepts stream.

Claim Group II further specifies consistency of the feed stream which is rated by Mr. de Jong to have a significant impact on purification provided the consistency is less

than about 1%; a feature not suggested in the references. Claim 22, reproduced below is representative of Claim Group II:

> 22. The method according to Claim 20, wherein said first aqueous feed stream has a consistency of less than about 1%.

Claim Group II is described in the application as filed, page 9, line 5 and following.

Claim Group III specifically recites either ink or stickies removal. Patentability of the Claim of Groups III is believed especially clear because of the unexpected, superior results with respect to these particular contaminants. See *In re Soni*, 34 USPQ2d 1684 (CAFC 1995). Claim 28 is representative of Claim Group III:

> 28. The method according to Claim 27, wherein the hydrophobic contaminants removed from said first aqueous rejects stream by said flotation stage comprises an ink composition and stickies.

This group of claims is described on page 9 of the application as filed, lines 11+.

Additional Evidence Submitted Bearing Upon Patentability

The *Declaration* submitted in this application under 37 CFR §1.132 from Robert de Jong, dated September 21, 2004, is attached hereto as Appendix B. The *Declaration* was submitted in response to the Office Action dated May 27, 2004. The Examiner considered the *Declaration* in the Final Office Action dated December 28, 2004, and appears to have entered it prior to that date. Paragraphs 3-5 of the *Declaration* are particularly pertinent to unexpected, superior results:

> 3. That the advantages of the invention are partially enumerated on page 3, line 9 through page 4, line 6:
>
> > In the past there were mainly small light weight stickies that managed to get through screens, and most of these small light weight stickies were subsequently removed by the gyro-cleans. More recently, heavy weight stickies started becoming a problem; presumably because some of the new

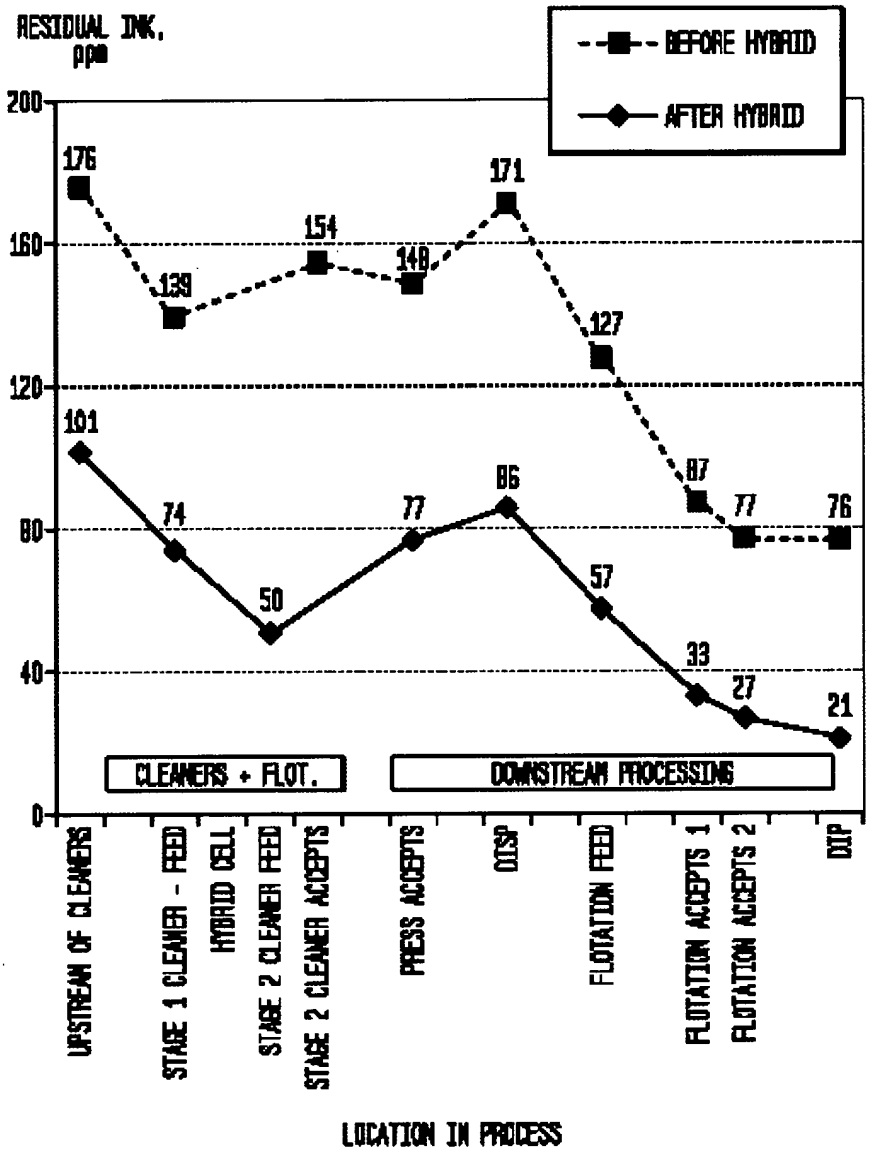
pressure sensitive adhesives tend to form heavy weight stickies. The small heavy weight stickies, which managed to get through screens, were also accepted by the gyro-cleans or reverse cleaners, but they were subsequently rejected with a lot of fiber by the forward cleaners. Since the heavy weight stickies from the forward cleaners are still hydrophobic, it is possible to selectively remove them with a flotation cell after the hydrophobic particles attach themselves to air bubbles in the flotation cell.

The heavy weight stickies are difficult to remove by flotation if they lose their hydrophobic properties during the deinking process (e.g., due to the addition of dispersing chemicals) or if the flotation cell is operated inefficiently (e.g., at too high a consistency or with insufficient air bubbles or due to inadequate contact between stickies and air bubbles).

One advantage of having the flotation cell on the forward cleaner rejects is that it is possible to keep the consistency low, since only 10 - 30% of the total flow is being treated (the percentage depends on reject flow amount). If all the stock is treated in a flotation cell, the tendency is to raise the consistency from 0.5 - 0.6% to 1% or higher to keep the size and cost of the equipment down. If the design consistency is already 1%, the heavy weight stickies removal efficiency becomes even worse when the consistency rises above 1% due to production increases. By installing a flotation cell on the forward cleaner rejects in an existing process, it is possible to design the hybrid cleaner flotation cell system at 0.5 - 0.6% consistency and obtain improved heavy weight stickies removal efficiency.

4. That, in his opinion, the results seen in **Figure 7** of the application as filed are unexpectedly superior based on the prior art with respect to ink removal:

FIG. 7



5. That the results seen with the invention with respect to stickies (which were retained on a Pulmac screen with 0.004 inch slots) and dirt removal in Tables 9-11 of the application as filed are likewise unexpectedly superior to prior art methods.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The claims on appeal stand rejected on the basis of obviousness only. The text of the appealed rejections is reproduced below:

A. From pp. 2-3 of the Office Action of May 27, 2004:

> Claims 20 and 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Vikio et al.*
>
> *Vikio* teaches processing paper fibers with a multistage array of forward cleaners configured to generate accept streams (14) and reject streams (15) which concentrates hydrophobic contaminants (e.g. stickies, see column 4, lines 55-58 or ink) feeding an aqueous feed stream including papermaking fibers to a first bank of centrifugal cleaners (vortex cleaners I and II); generating a first accepts stream (14_I or 14_{II}) and a first rejects aqueous stream ($20'_I$ or 20_{II}) enriched in heavy hydrophobic contaminants, eg. Stickies, see column 4, lines 55-58; supplying a first rejects stream ($20'_I$ or 20_{II}) to a flotation stage (Figure 1, 50) or (Figure 2, 54); removing the rejects stream from the flotation stage to remove hydrophobic waste and produce an intermediate purified aqueous stream (Figure 2, 49 form flotation stage 54); feeding the purified stream 49 (column, 33-36) can be fed back to system 10 to the feed stream after the first bank of centrifugal cleaners (I, II) and prior to the second bank of centrifugal cleaners (III, IV). *Vikio et al.* teaches that the accept fractions are recycled to the preceding stages and the cleaned slurry discharged through conduit 12 to a paper machine (column 4, lines 46-48). The accept portion (14_{II}) is shown to combine with accept portion (14_I). It would have been obvious to the routineer to combine any of the accept portions with any other accept portion and sending the combined accept fibers to the paper machine as all the accept portions contain papermaking fibers. See column 4, lines 35-39 for consistency of 0.5 to 4.5%; see vortex cleaners V and VI and/or Figure 2, (61) for third bank of centrifugal cleaners.
>
> Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Vikio* (5,882,475) as applied to claim 20 above, and further in view of MAXHAM (4,983,258) or MARKHAM *et al.* (5,234,543).
>
> MAXHAM (71) or MARKHAM *et al.* (Figure 2, (40) teach thickening pulp after fiber cleaning and recycling and prior to being formed into paper. It would have been obvious to thicken the cleaned pulp of *Vikio et al.* in the manner taught by MAXHAM or MARKHAM *et al.* prior to sending the pulp to the paper making machine. It is well known that paper is made from pulp slurries that are added to the paper machine at certain consistencies. It would have been obvious to the artisan to use the dewater of MAXHAM or MARKHAM *et al.* to bring the pulp to the proper consistency for use in the paper machine of *Vikio et al.*

B. From pp. 2-3 of the Office Action of December 28, 2004:

> Claims 20, 22-29 and 38-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Vikio et al.* for the reasons set forth on page 2, in the Office Action of May 27, 2004.
>
> With respect to claims 38-41 it would have been obvious that the flotation removal of the ink particles, stickies and dirt (column 4, line 52-column 5, line 3) would result in a brighter pulp containing a lower ink, stickie and dirt concentrations. See the same lines, for recirculating the slurry to the inlet of any other stage and preferably upstream (in the direction of arrow 32) of the outlet 20. The direction of arrow (32) goes from the upstream direction to the downstream direction. Thus it would have been obvious from the teachings of *Vikio et al.* to recirculate the slurry towards the beginning of the arrow flow or in cleaner stages towards the end of the process, e.g. near cleaners 4 or 5. The term "selectively remove hydrophobic waste" is a relative term and does not define over the hydrophobic waste removal of *Vikio et al.*
>
> Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Vikio et al.* in view of MAXHAM or MARKHAM *et al.*, for the reasons set forth on page 2, in the Office Action of May 27, 2004.
>
> The argument that the instant process feeds the treated stream forward in the system is not convincing as *Vikio et al.* teaches recirculating the slurry to the inlet of any other stage and preferably upstream. This would be the same forward feed as used in the instant process. The Declaration of Robert de Jong has been considered, but it is not convincing as it is not a comparison of the instant process to the closest prior art, e.g. the process of *Vikio et al.* The system of *Vikio et al.* as the instant process is a hybrid cleaning system. The argument that micro-flotation, vortex flotation are not known for selective removal is not convincing as the instant claims call for flotation. This does not distinguish over the micro-flotation or vortex flotation of *Vikio et al.* As set forth above, the term "selectively remove hydrophobic waste" is a relative term and does not define over the hydrophobic waste removal of *Vikio et al.* It is not clear as to what the removal is selective, e.g. what is removed and what is not removed?

All of the rejections in this case should be reversed because *Vikio et al.* (United States Patent No. 5,882,475) does not disclose selectively purifying a rejects stream in a forward cleaning system of hydrophobic contaminants and the reference specifically states that treated reject material is preferably fed backward (upstream). The Examiner's contentions

as to the reference are hindsight. Arrow **32** in **Figure 1** of *Vikio et al.* points **upstream**, not downstream as is apparently contended by the Examiner.

Simply put, *Vikio et al.* fails to disclose an important element of the claims and it points the wrong way. Accordingly, the claimed subject matter is nonobvious.

VII. ARGUMENT

Salient features of the present invention include **selectively** removing **hydrophobic** waste from rejects stream in a forward cleaning system and **feeding forward** the selectively purified stream. The specifically claimed arrangement offers significant advantages in recycle pulp processing as is seen, for example, at pp. 5-6 of the application as filed:

> One advantage of feeding the second accepts stream forward is that it does not have to be returned to the first bank of cleaners for re-cleaning. This reduces the size of the first bank of cleaners or allows an existing installation to operate at a lower consistency. (The cleaners operate more efficiently at a low consistency of 0.5% than at 0.8 or 1%). Another advantage is that the flotation cell typically operates at greater than 60% efficiency on removing hydrophobic contaminants from the first cleaner rejects, while another cleaner stage removes less than 50% of the hydrophobic contaminants. As a result a large quantity of hydrophobic contaminants are removed in the flotation stage, which makes the remaining cleaner stages work more efficiently with less good fiber loss.
>
> As will be appreciated by one of skill in the art, the size and cost of a flotation stage for treating secondary fiber can be reduced by up to 75% if it is installed in centrifugal cleaner system as compared to a full scale treatment of the stock by flotation. The centrifugal cleaner system modeling indicates a 34% reduction in ink speck area of total centrifugal cleaner system accepts by removing ink specks from the first stage rejects with 80% efficiency in a flotation stage and then feeding the flotation accepts forward after centrifugal cleaning of the second stage. (24% reduction if second stage rejects are treated in a similar manner). The ability to feed the centrifugal cleaner rejects forward (after the flotation stage and additional centrifugal cleaning in the next stage) reduces the stock consistency in the first stage, thereby improving the efficiency of the first stage. The capacity of the system is also increased by feeding the second stage centrifugal cleaner accepts forward. The other centrifugal cleaner stages can also be operated more efficiently since more than 50% of the ink in the first stage centrifugal cleaner rejects has been removed in the flotation stage. When the centrifugal cleaner accepts are

> thickened in a press, a large amount of ink ends up in the pressate. This ink can also be removed by using the ink-laden pressate as dilution water for the centrifugal cleaner rejects going to the flotation stage.

p. 5, line 10 – p. 6, line 9.

Contrary to the present invention, *Vikio et al.* teaches to feed a rejects stream preferably **upstream** as is conventional rather than **forward** or downstream as is claimed. *Vikio et al.* teaches away from the claimed invention in this respect and the rejections should be reversed for this reason.

Furthermore, *Vikio et al.* does not teach to **selectively** remove hydrophobic waste from a rejects stream. The rejections should be reversed for this reason as well.

A. Claims 20, 22-29 and 38-41 are Patentable Over *Vikio et al.*

Vikio et al. does not teach or suggest a process where the first rejects stream is supplied to a flotation stage and treated to selectively remove hydrophobic waste. On this point the Examiner stated that the term "selectively remove hydrophobic waste" in Claim 20 is a relative term. Of course it is relative in some respects because a selection is necessarily relative to other components. The terminology "selectively" removing hydrophobic waste has its ordinary meaning -- reducing the relative percentage of hydrophobic waste (e.g., stickies and ink as defined in the application as filed at p. 9, lines 11-16) relative to other components in the stream. Note page 6 of the application as filed, lines 19-26:

> By sending the first or second stage centrifugal cleaner rejects to a flotation stage (as shown in Figure 2) it is possible to remove a much higher percentage of the ink specks in office waste. (It was possible to obtain 80% removal of ink specks during a pilot plant trial with a flotation cell operated on second stage centrifugal cleaner rejects.) If the accepts of the flotation cell are cleaned in the next centrifugal cleaner stage, the centrifugal cleaner accepts from that stage can then be fed forward to the thickener. Sending centrifugal cleaner accepts forward reduces the load and improves the efficiency of the previous centrifugal cleaner stage.

The hydrophobic contaminants (ink in this case) is selectively removed from the office waste and the accepted fiber in the office waste is fed forward. The Examiner has not accorded any

weight as to the claim term **selectively** which is clear error. All elements of the claims need to be considered. The Examiner's position on *Vikio et al.* and the term "**selectively**" is especially untenable in view of Mr. de Jong's *Declaration*, paragraphs 7 and 8:

7. That, in his opinion, the '475 *Vikio et al.* patent does not teach or remotely suggest **selectively** purifying the rejects stream of a forward cleaner system of hydrophobic waste and feeding forward the purified stream. Rather, the '475 Vikio et al. patent appears to be suggesting that only the fine fraction of the waste stream can be purified of waste by **non-selective** methods and that the purified water can be returned to the system or discarded. The coarse fraction containing the large contaminants (including large stickies and ink particles retained on the slotted fractionating screens) is re-fed to the cleaner system upstream from the point at which it is taken.

8. That he reaches the above conclusion based, in part, on col. 5 of *Vikio et al.* '475, line 15 and following:

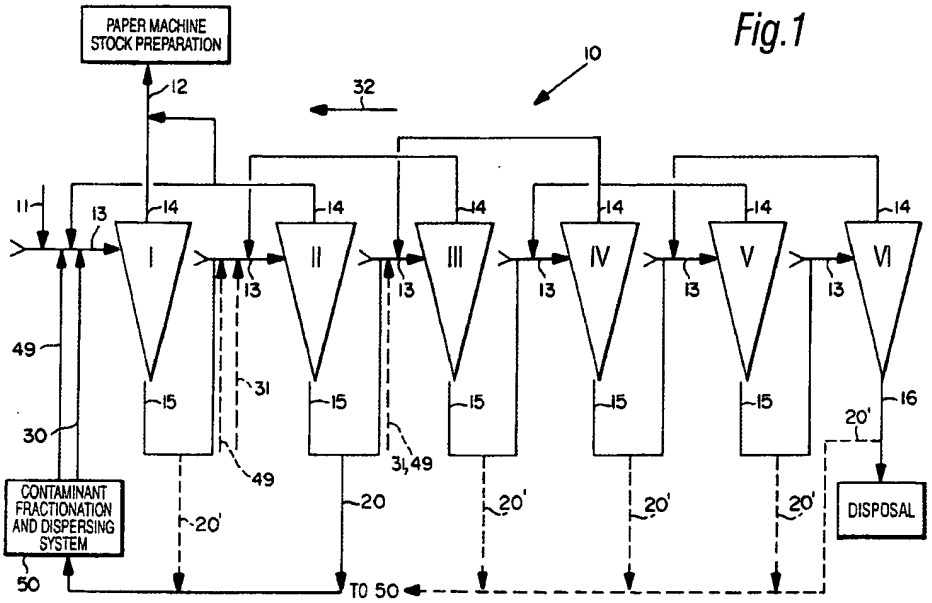
> **Fractionator 52 divides the slurry flow into a fine fraction stream 53 and a coarse traction stream 56. The fine fraction stream 53 typically contains fine contaminants and ink. For example, stream 53 preferably contains most of the ink and other fine undesirable particles introduced in conduit(s) 20, 20', plus fines and small filler particles, among other things, which are typically smaller than 100 microns. Optionally this stream may be further treated in device 54, for example via flotation or cleaning, to further isolate the ink particles. The flotation at 54 may comprise micro-flotation or flotation in a vortex flotation system, such as a GSC® flotation system as sold by Ahlstrom Machinery. If the device 54 is a cleaning device it may be a reverse vortex cleaner, or other suitable conventional cleaner, which may include, or be without, chemical treatment of the flow is to have the ink particles as larger agglomerates as described in U.S. Pat. No. 5,587,078. Stream 53 may alternatively be sent directly to waste water treatment, or from flotation or cleaning device 54 the slurry at 55 is sent to waste water treatment. The cleaned portion (a fourth stream) of the stream 53 from device 54 may be passed in line 49 back to system 10 to any position or divided illustrated in FIG. 1.**

as well as the fact that micro-flotation (dissolved air flotation), vortex flotation, and reverse vortex cleaners are not devices known for selectively removing hydrophobic waste.

Mr. de Jong specifically states that **none** of the flotation devices noted by *Vikio et al.* are known to selectively remove hydrophobic waste. Dissolved air or micro flotation is not known to be selective for hydrophobic waste, nor is vortex flotation. An ordinary flotation cell, shown to be effective for ink and stickies, as is used in connection with the present invention, is effective for removing hydrophobic waste.

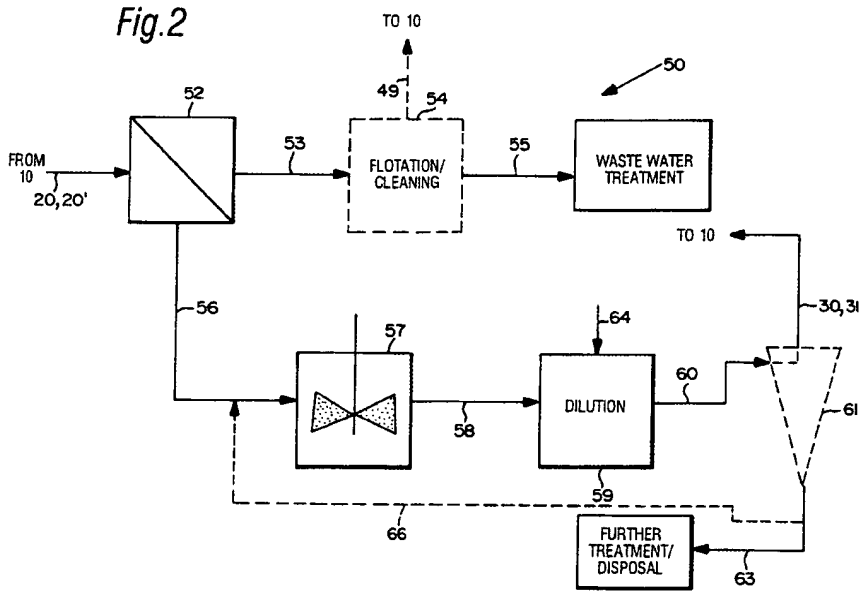
Furthermore, *Vikio et al.* does not teach that a treated rejects stream should be **fed forward** as is claimed. *Vikio et al.* specifically states rejects should **preferably** be fed backward after treatment. In this regard, the Examiner's statement in the *Final Rejection* that arrow **32** of *Vikio et al.* indicates a downstream direction is clearly mistaken. Arrow **32** points upstream as is seen in *Vikio et al.* **Figure 1**, discussed below.

Figure 1 of *Vikio et al.*



Vikio et al. discloses a process where a rejects stream **20, 20'** from one of the cleaning stages is fed to a contaminant fractionation and dispersing system **50**. The contaminant fractionating and dispersing system, illustrated in **Figure 2** of *Vikio et al.*, is reproduced below.

Figure 2 of *Vikio et al.*



As can be seen from **Figure 2**, the rejects stream is passed to a fractionator **52** which produces a coarse stream **56** and a fines stream **53**. The fines stream may be sent to wastewater treatment or optionally treated in another cleaning system and returned to the apparatus of **Figure 1**.

Claim 20 on appeal recites that the first rejects stream of the system is fed to a flotation stage and treated to selectively remove hydrophobic waste, *i.e.*, removal based on the hydrophobicity as opposed to other means. *Vikio et al.*, on the other hand, does not selectively remove contaminants based on their hydrophobicity, but instead removes them based primarily on size. As can be seen in **Figure 2** of *Vikio et al*, the first aqueous rejects stream **20, 20'** is separated into two streams based on the size of the particles. The coarse stream **56** coming off of the fractionator contains the contaminants larger than 100 microns and most of the fiber. *See* col. 2, lines 44-46; col. 5, lines 37-40. The fines stream only contains particles smaller than 100 microns. *See* col. 5, lines 20-22. The coarse stream is **never** sent to a flotation stage for selective removal of contaminants. Instead, the coarse stream is sent to an agitator 57 and then optionally sent to a conventional cleaner to remove heavy contaminants. It is clear from *Vikio et al.* that contaminants which are larger than 100

μm in the first rejects stream are not selectively removed based on their hydrophobicity. Rather, they are removed, if at all, based on size via the fractionator or based on density in the vortex cleaners.

Vikio et al. similarly does not suggest that the fines stream should be treated for the **selective** removal of hydrophobic waste. *Vikio et al* states that the fines stream is *optionally* sent to another cleaning stage **54**. Alternatively, the fines stream may be discarded. If sent to stage **54**, the fines stream may then be treated by a reverse vortex cleaner, micro-flotation, or vortex flotation (col. 5, lines 24-26). Even if the fines stream is so treated, however, none of these devices are known to selectively remove hydrophobic waste so noted above. *See Declaration* of Robert de Jong, paragraph 8 wherein all of these methods are characterized as non-selective.

Vikio et al. also differs from the present invention because it teaches to feed treated rejects material backward. Claim 20 of the present application recites that (1) the purified stream is sent *forward* and that (2) the second accepts stream is combined with the first accepts stream. *Vikio* does not teach the present invention in a manner that would suggest the desirability of practicing the process to a skilled artisan. *See In re Brouwer*, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996). Instead, *Vikio et al.* teaches a system having a vast number of permutations and options, including an express statement that treated rejects material preferably be returned upstream; pointing away from, not toward the present invention.

Vikio et al. specifically states that a rejects stream is taken out of an outlet **20**, is withdrawn from a cleaning stage (preferably stage II), and is then treated in a contaminant fractionation and dispersion system **50**. Here, *Vikio et al.* teaches that it is preferable to feed the treated slurry upstream from the outlet. As stated in Cols. 4 and 5:

> The slurry cleaned according to the system **50** of the invention is re-introduced to one or more cleaner stage inlets of system **10**, for example, to the inlet of stage I via conduit **30**. The treated slurry may also re-introduced to the inlet of any other cleaner stage, for example via conduit **31**, and is preferably introduced upstream (in the direction of flow **32**) of the outlet **20**.

The reference teaches that flow **32** is *preferably* **upstream**. Later, the *Vikio et al.* patent states that the stream treated in the flotation/cleaning stage "may be passed in line **49** back to system **10** to any position ...", which is appropriate for diluent water. *See* de Jong *Declaration*, ¶7. What *Vikio et al* teaches is : sort the rejects based on size; disperse the coarse material and send it back; optionally treat or discard the fine fraction; if you treat the fines stream, remove everything and send the treated water back anywhere, preferably upstream. That disclosure does not remotely equate to selectively removing hydrophobic waste from a forward cleaner rejects stream and feeding the purified material forward. It points the wrong way.

The invention improves throughput and efficiency by feeding the cleaned fiber **forward** or downstream. Improvements in efficiency as is achieved with the present invention are ordinarily patentable as was noted in *In re Wright*, 122 USPQ 522, 524 (CCPA 1959):

> Though the court may have believed that each of the elements in the patented device was old, it does not follow that the combination was unpatentable. We need not elaborate upon the rule that a novel combination of old elements which so cooperate with each other so as to produce a new and useful result **or a substantial increase in efficiency, is patentable.** See Lewyt Corp. v. Health-Mor, Inc., 7 Cir., 181 F.2d 855, 85 USPQ 335 , certiorari denied 340 U.S. 823, 71 S.Ct. 57, 95 L.Ed. 605, 87 USPQ 432 ; Blaw-Knox Co. v. Lain Co., 7 Cir., 230 F.2d 373, 108 USPQ 356 . Weller Manufacturing Company v. Wen Products, Inc., 7 Cir., 231 F.2d 795, 798, 109 USPQ 73, 75 (1956).

The Examiner's rejection of the claims based on insufficient disclosure of *Vikio et al.* is tantamount to stating that the modification is within the capability of one of skilled in the

art. That reasoning has been soundly rejected by the Courts and the Office, as is seen in MPEP §2143:

> **FACT THAT THE CLAIMED INVENTION IS WITHIN THE CAPABILITIES OF ONE OF ORDINARY SKILL IN THE ART IS NOT SUFFICIENT BY ITSELF TO ESTABLISH *PRIMA FACIE* OBVIOUSNESS**
>
> A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cr. 2000) (Court reversed obviousness rejection involving technologically simple concept because there was no finding as to the principle or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention); Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999) (The level of skill in the art cannot be relied upon to provide the suggestion to combine references.).

The Examiner's rejection of the claims based on *Vikio* which teaches to feed a treated rejects stream **upstream** is likewise contrary to MPEP §2143.03.

> **PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS**
>
> A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.* 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (Claims were directed to a process of producing a porous article by expanding shaped, unsintered, highly crystalline poly(tetrafluoroethylene (PTFE) by stretching said PTFE at a 10% per second rate to more than five times the original length. The prior art teachings with regard to unsintered PTFE indicated the material does not respond to conventional plastics processing, and the material should be stretched slowly. A reference teaching rapid stretching of conventional plastic polypropylene with reduced crystallinity combined with a reference teaching stretching unsintered PTFE would not suggest rapid stretching of highly crystalline PTFE, in light of the disclosures in the art that

> teach away from the invention, i.e., that the conventional polypropylene should have reduced crystallinity before stretching and that PTFE should be stretched slowly.).

The Group I claims are believed clearly patentable over *Vikio et al.* which teaches away from the claimed subject matter. *See also*, *In re Baird*, 29 USPQ2d 1550 (CAFC 1994).

B. Claim 21 is Patentable

Claim 21 is believed allowable for the same reasons as the other claims of Group I.

C. Additional Reasons as to Patentability of Claims 22, 23, 24

Claim Group II is patentable for the reasons discussed above and for the further reasons annotated below. It is noted in Robert de Jong's *Declaration* that the remarkable results achieved with the present invention are due, in part, to the ability to operate at relatively low consistency. In this regard, *note* the last portion of paragraph 3 of his *Declaration*:

> One advantage of having the flotation cell on the forward cleaner rejects is that it is possible to keep the consistency low, since only 10 - 30% of the total flow is being treated (the percentage depends on reject flow amount). If all the stock is treated in a flotation cell, the tendency is to raise the consistency from 0.5 - 0.6% to 1% or higher to keep the size and cost of the equipment down. If the design consistency is already 1%, the heavy weight stickies removal efficiency becomes even worse when the consistency rises above 1% due to production increases. By installing a flotation cell on the forward cleaner rejects in an existing process, it is possible to design the hybrid cleaner flotation cell system at 0.5 - 0.6% consistency and obtain improved heavy weight stickies removal efficiency.

Vikio et al., on the other hand, directs one to operate a forward cleaning system anywhere from 0.5 to 4.5% and preferably from 1.5 to 3.5% (col. 4, lines 36-39). Clearly, *Vikio et al.* specifically directs one to operate away from Claim Group II which is directed to embodiments of less than about 1%, where removal efficiencies are higher.

D. Additional Reasons as to Patentability of Claims 26, 27, 28, 39, 40

Claim Group III is patentable for the reasons discussed above in connection with Claim Group I and for further reasons discussed in this section. Claim Group III is specific to stickies and ink removal.

The configuration of the process as claimed, achieves a remarkable removal of unwanted contaminants over conventional non-hybrid processes. The inventive process has superior removal of contaminants, especially ink particles, and stickies. The level of stickies removal in the present invention is particularly dramatic compared to processes employing conventional cleaners. Stickies are undesirable because they can adhere to parts the production equipment or show up on the sheet as spots. Stickie buildup can force stoppages in production in order to correct these problems. The improved stickie removal of the present invention is illustrated by Table 11, of the application as filed, reproduced below.

TABLE 11

Comparative Stickies Removal
(Small stickies = <0.28 mm^2; Large stickies = 0.28–1.47 mm^2; X-Large stickies = >1.47 mm^2)

Process Location and Data Set	Pulmac Stickies (mm^2/100 grams) Small	Large	X-Large	Total	Total Removal Efficiency
Data Set A					
High Density Cleaner	72	219	119	409	
1st Washer - out	76.9	51.3	10	138	1st washer-DIP = 85.3%
Disperger - in	49.1	0	0	49	
Deinked Pulp	20.3	0	0	20	HDCL-DIP = 95.0%
Data Set B					
1st Washer - out	64.0	13.3	0	77	1st washer-DIP = 91.0%
Fine Slotted Screens - out	50.8	3.1	0.54		
St.1 Cleaner - in	42.9	0.5	0	43	
St.1 Cleaner - out	36.9	2.8	0	40	
St.2 Cleaner - out	43.6	0	0	44	

TABLE 11-continued

Comparative Stickies Removal
(Small stickies = <0.28 mm^2; Large stickies = 0.28–1.47 mm^2; X-Large stickies = >1.47 mm^2)

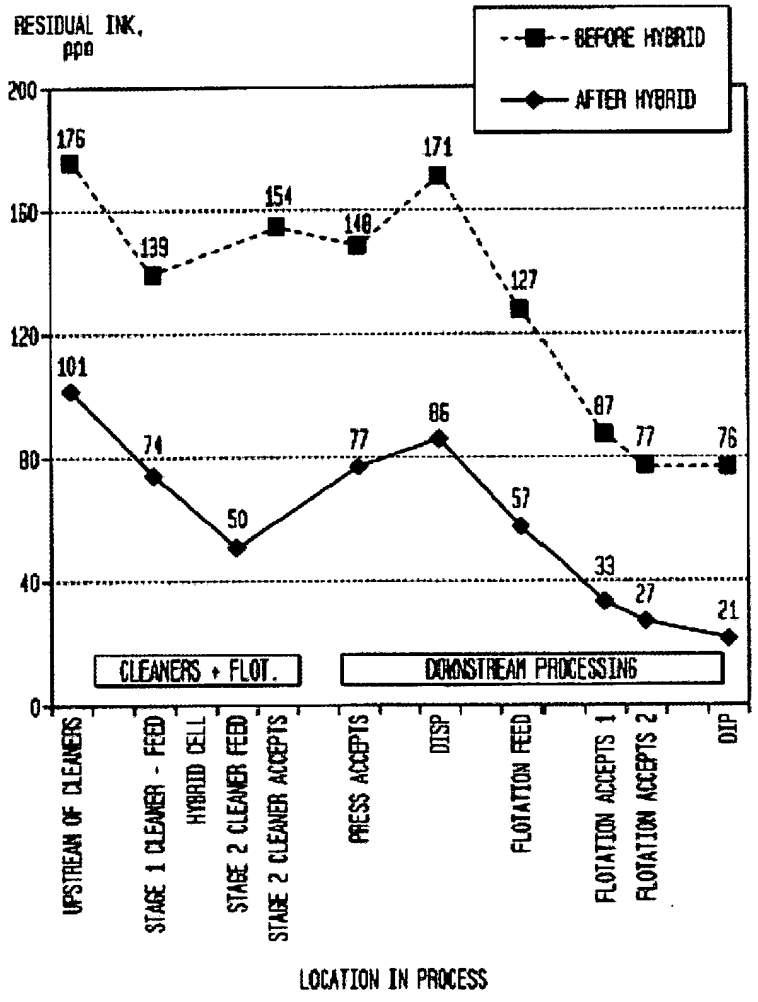
Process Location and Data Set	Pulmac Stickies (mm^2/100 grams) Small	Large	X-Large	Total	Total Removal Efficiency
Disperger - in	48.9	2.7	0	52	
Disperger - out	31.9	0	0	32	
Deinked Pulp	6.8	0	0	7	
Data Set C					
High Density Cleaner	102	168	37	306	
1st Washer - out	54.7	10.9	0	66	1st washer-DIP = 93.0%
Fine Slotted Screens - out	53.1	0	0	53	
Comer cell - Feed	48.8	0	0	49	Comer in-out = 62%
Comer Cell - Accepts	18.1	0.6	0	19	
Disperger - in	35.9	0	0	36	Disp. in-out = 34%
Disperger-out	21.6	0	0	22	
Deinked Pulp	4.6	0	0	5	HDCl-DIP = 98.5%

The measurements in Data Set C represent the inventive method and the measurements in Data Sets A and B represent the conventional, non-hybrid processes. As can be seen from Table 11, the overall stickies removal efficiency improved from 95.0 % to

98.5%. The additional improvement of 3.5 % absolute is an extraordinary relative improvement; 3.5/5 or 70% removal of stickies not removed by prior art methods. Prior to the installation of the inventive hybrid process, the plant experienced a downtime of about 10 hours per month due to stickie-related stoppages. After the inventive process was installed the plant had run for eight months with **no stoppages** due to stickies, thus preventing about 80 hours of production downtime. *See* p. 8, lines 10-16, of the application as filed.

The level of ink removal is also vastly superior to prior art processes. **Figure 7** of the pending application illustrates this result:

FIG. 7



As stated in the attached *Declaration* at ¶4, the overall reduction in ink particles achieved by the present invention is unexpectedly superior to prior art methods. The ink levels dropped from 76 ppm without the inventive process, to only 21 ppm when the hybrid process was employed in the plant. This represents an improvement of **over 70 %** in ink removal, by treating only a small fraction of the process stream.

Robert de Jong confirmed in paragraphs 4 and 5 of his *Declaration* that the superior results seen with ink particles and stickies were unexpected. With that affirmation any arguable contention of obviousness is rebutted. In this regard, Applicant notes *In re Soni*, 34 USPQ2d 1684, 1687 (CAFC 1995):

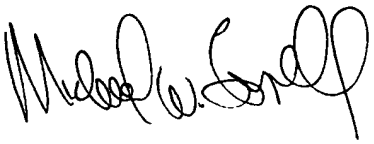
> Mere improvement in properties does not always suffice to show unexpected results. In our view, however, when an applicant demonstrates substantially improved results, as Soni did here, and states that the results were unexpected, this should suffice to establish unexpected results in the absence of evidence to the contrary. Soni, who owed the PTO a duty of candor, made such a showing here. The PTO has not provided any persuasive basis to question Soni's comparative data and assertion that the demonstrated results were unexpected. Thus, we are persuaded that the Board's finding that Soni did not establish unexpected results is clearly erroneous.

The inventive process has been shown to be remarkably improved over conventional processes which do not selectively remove hydrophobic waste. The improvements are particularly notable with respect to ink removal and stickie-related production stoppages. And, when an applicant shows superior, unexpected results, as in this case, issuance is warranted.

VIII. CONCLUSION

For the above reasons, all outstanding rejections should be reversed and all claims should be allowed.

Respectfully submitted,



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May 2, 2005

APPENDIX A
CLAIMS ON APPEAL

20. A method of processing papermaking fibers with a multistage array of forward cleaners including a plurality of centrifugal cleaners configured to generate accepts streams and rejects streams which concentrate hydrophobic contaminants, said method comprising:

(a) feeding a first aqueous feed stream including papermaking fibers to a first stage bank of centrifugal cleaners of said multistage array;

(b) generating a first accepts aqueous stream and a first rejects aqueous stream in said first stage bank of centrifugal cleaners, said first aqueous rejects stream being enriched in heavy hydrophobic contaminants with respect to said first aqueous feed stream;

(c) supplying said first rejects aqueous stream to a flotation stage;

(d) treating said first rejects aqueous stream in said flotation stage to selectively remove hydrophobic waste from said first aqueous rejects stream and produce an intermediate aqueous purified feed stream;

(e) feeding said aqueous purified intermediate feed stream forward to a second stage bank of centrifugal cleaners of said multistage array, said second centrifugal cleaner being configured to generate a second accepts aqueous stream; and

(f) combining said first accepts aqueous stream with said second accepts aqueous stream to form a combined accepts stream.

21. The method according to Claim 20, further comprising the step of thickening said combined accepts stream.

22. The method according to Claim 20, wherein said first aqueous feed stream has a consistency of less than about 1%.

23. The method according to Claim 20, wherein said first aqueous feed stream has a consistency of from about 0.3% to about 0.9%.

24. The method according to Claim 23, wherein said first aqueous feed stream has a consistency of from about 0.4% to about 0.7%.

25. The method according to Claim 20, wherein said multistage array of forward cleaners comprises at least 3 banks of centrifugal cleaners.

26. The method according to Claim 20, wherein the hydrophobic contaminants removed from said first aqueous rejects stream by said flotation stage includes an ink composition.

27. The method according to Claim 26, wherein said ink composition is a toner ink composition.

28. The method according to Claim 27, wherein the hydrophobic contaminants removed from said first aqueous rejects stream by said flotation stage comprises an ink composition and stickies.

29. The method according to Claim 28, wherein said ink composition comprises a toner ink composition and said stickies comprise stickies derived from pressure sensitive adhesives.

38. The method according to Claim 20, operative to improve brightness of treated pulp as compared with like pulp subjected to like treatment without flotation treatment of a rejects stream.

39. The method according to Claim 20, operative to reduce effective residual ink concentration in treated pulp as compared with like pulp subjected to like treatment without flotation treatment of a rejects stream.

40. The method according to Claim 20, operative to reduce the stickies content in treated pulp as compared with like pulp subjected to like treatment without flotation treatment of a rejects stream.

41. The method according to Claim 20, operative to improve the dirt removal efficiency of a multi-stage array of forward cleaners as compared with a like system without flotation treatment of a rejects stream.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	:	
Robert L. de Jong et al.	:	Examiner: M.S. Alvo
U.S. Serial No. 10/099,610	:	Group Art Unit: 1731
Filed March 15, 2002	:	
Docket No. 2212-1 (FJ-00-1-1)	:	
For: METHOD OF REMOVING HIGH DENSITY STICKIES FROM SECONDARY PAPERMAKING FIBERS	:	

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

DECLARATION OF ROBERT de JONG UNDER 37 CFR 1.132

Sir:

Robert de Jong, coinventor of the subject matter of the above-noted application, makes the following statements in support of patentability.

1. That he was awarded a BSc degree in Chemical Engineering from Massachusetts Institute of Technology in 1958 and has worked for over forty (40) years in the paper industry. As part of his work, his responsibilities included design, operation and troubleshooting of recycle pulp cleaning systems. That he is familiar with devices and systems such as forward cleaner systems, flotation devices, microflotation devices, vortex cleaners and so forth.

2. That the invention of the above-noted patent application resides, in part, in the discovery that a rejects stream of a forward cleaning system could be selectively purified of

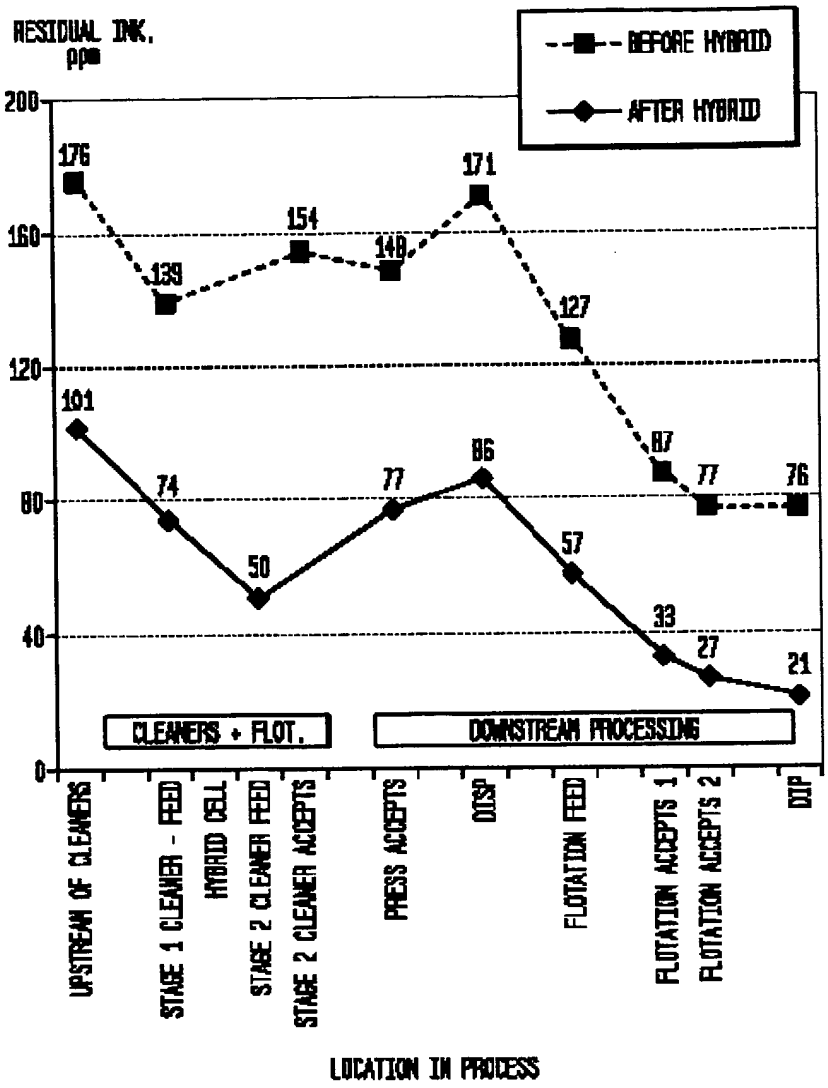
hydrophobic waste such as stickies by a flotation cell and fed forward thereby increasing system throughput and efficacy of hydrophobic waste removal, such as stickies removal.

3. That the advantages of the invention are partially enumerated on page 3, line 9 through page 4, line 6:

> In the past there were mainly small light weight stickies that managed to get through screens, and most of these small light weight stickies were subsequently removed by the gyro-cleans. More recently, heavy weight stickies started becoming a problem; presumably because some of the new pressure sensitive adhesives tend to form heavy weight stickies. The small heavy weight stickies, which managed to get through screens, were also accepted by the gyro-cleans or reverse cleaners, but they were subsequently rejected with alot of fiber by the forward cleaners. Since the heavy weight stickies from the forward cleaners are still hydrophobic, it is possible to selectively remove them with a flotation cell after the hydrophobic particles attach themselves to air bubbles in the flotation cell.
>
> The heavy weight stickies are difficult to remove by flotation if they lose their hydrophobic properties during the deinking process (e.g., due to the addition of dispersing chemicals) or if the flotation cell is operated inefficiently (e.g., at too high a consistency or with insufficient air bubbles or due to inadequate contact between stickies and air bubbles).
>
> One advantage of having the flotation cell on the forward cleaner rejects is that it is possible to keep the consistency low, since only 10 - 30% of the total flow is being treated (the percentage depends on reject flow amount). If all the stock is treated in a flotation cell, the tendency is to raise the consistency from 0.5 - 0.6% to 1% or higher to keep the size and cost of the equipment down. If the design consistency is already 1%, the heavy weight stickies removal efficiency becomes even worse when the consistency rises above 1% due to production increases. By installing a flotation cell on the forward cleaner rejects in an existing process, it is possible to design the hybrid cleaner flotation cell system at 0.5 - 0.6% consistency and obtain improved heavy weight stickies removal efficiency.

4. That, in his opinion, the results seen in **Figure 7** of the application as filed are unexpectedly superior based on the prior art with respect to ink removal:

FIG. 7



5. That the results seen with the invention with respect to stickies (which were retained on a Pulmac screen with 0.004 inch slots) and dirt removal in Tables 9-11 of the application as filed are likewise unexpectedly superior to prior art methods.

6. That he has read the Office Action of May 27, 2004 as well as United States Patent No. 5,882,475 to *Vikio et al.*

7. That, in his opinion, the '475 *Vikio et al.* patent does not teach or remotely suggest selectively purifying the rejects stream of a forward cleaner system of hydrophobic waste and feeding forward the purified stream. Rather, the '475 Vikio et al. patent appears to be suggesting that only the fine fraction of the waste stream can be purified of waste by non-selective methods and that the purified water can be returned to the system or discarded. The coarse fraction containing the large contaminants (including large stickies and ink particles retained on the slotted fractionating screens) is re-fed to the cleaner system upstream from the point at which it is taken.

8. That he reaches the above conclusion based, in part, on Col. 5 of *Vikio et al.* '475, line 15 and following:

> Fractionator **52** divides the slurry flow into a fine fraction stream **53** and a coarse fraction stream **56**. The fine fraction stream **53** typically contains fine contaminants and ink. For example, stream **53** preferably contains most of the ink and other fine undesirable particles introduced in conduit(s) **20**, **20'**, plus fines and small filler particles, among other things, which are typically smaller than **100** microns. Optionally this stream may be further treated in device **54**, for example via flotation or cleaning, to further isolate the ink particles. The flotation at **54** may comprise micro-flotation or flotation in a vortex flotation system, such as a GSC® flotation system as sold by Ahlstrom Machinery. If the device **54** is a cleaning device it may be a reverse vortex cleaner, or other suitable conventional cleaner, which may include, or be without, chemical treatment of the flow is to have the ink particles as larger agglomerates as described in U.S. Pat. No. 5,587,078. Stream **53** may alternatively be sent directly to waste water treatment, or from flotation or cleaning device **54** the slurry at **55** is sent to waste water treatment. The cleaned portion (a fourth stream) of the stream **53** from device **54** may be passed in line **49** back to system **10** to any position or divided illustrated in FIG. 1.

as well as the fact that micro-flotation (dissolved air flotation), vortex flotation, and reverse vortex cleaners are not devices known for selectively removing hydrophobic waste.

9. That he further notes that *Vikio et al.* '475 generally teaches that a treated rejects stream containing fiber should be re-fed upstream from the point at which it was taken. In this regard, Col. 5, line 2 is noted. This is a teaching directly contrary to the

invention of the above-noted patent application, further illustrating that *Vikio et al.* '475 does not remotely suggest the invention.

10. The undersigned Declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the subject application or any patent issuing thereon.

Sept.21, 2004
Date

Robert de Jong